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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/598,170	04/23/2007	Chun-Byung Yang	W014 P01392-US	1926
3017 7590 07/10/2008 BARLOW, JOSEPHS & HOLMES, LTD. 101 DYER STREET 5TH FLOOR PROVIDENCE, RI 02903			EXAMINER CHOI, LING SIU	
			ART UNIT 1796	PAPER NUMBER
			NOTIFICATION DATE 07/10/2008	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

<b>Office Action Summary</b>	<b>Application No.</b> 10/598,170	<b>Applicant(s)</b> YANG ET AL.	
	<b>Examiner</b> Ling-Siu Choi	<b>Art Unit</b> 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 September 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>09/14/2006</u> .  | 6) <input type="checkbox"/> Other: _____                          |

### DETAILED ACTION

1. This Office action is in response to the Preliminary Amendment filed 08/20/2006.  
Claim 5 has been added and claims 1-5 are now pending.

### *Claim Analysis*

2. Summary of Claim 1:

A preparation method for a solid titanium catalyst for olefin polymerization, which comprises the steps of:	
1	preparing a <u>magnesium compound solution</u> by dissolving a <b>magnesium halide</b> compound into a mixed solvent of a <b>cyclic ether</b> and one or more of <b>alcohol</b> ;
2	preparing a <u>carrier</u> by adding a mixture of titanium compound having a general formula of <b>Ti (OR)<sub>a</sub>X<sub>(4-a)</sub></b> , and <b>halogenated hydrocarbon</b> to the <u>magnesium compound solution</u> at -70 - 70°C and then elevating the temperature for reaction; wherein R is an alkyl group having 1-10 carbon atoms, X is a halogen atom and a is an integer of 0-4, and wherein the molar ratio of the halogenated hydrocarbon / the titanium compound = 1:0.05 - 1:0.95,
3	preparing a <u>solid titanium catalyst</u> by reacting the <u>carrier</u> with a <b>titanium compound</b> and an <b>electron donor</b>

### *Claim Rejections -35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang et al. (US 6,034,025) in view of Kioka et al. (US 4,330,649).

Yang et al. disclose a process to prepare a catalyst for polymerization of olefins, comprising (A) preparing a magnesium compound solution by dissolving a magnesium halide compound in a mixture of a **cyclic ether** and at least two different **alcohols** to form an intermediate solution and adding an organosilane compound to the intermediate solution to form the magnesium compound solution; (B) producing solid components by precipitating magnesium compound solution with a **titanium halide compound** in the presence of a **halogenated hydrocarbon** at **-70°C-70°C**; and (C) reacting the precipitated solid components with a **titanium compound** and an **electron donor**, wherein the cyclic ether includes tetrahydrofuran; the titanium halide compound is  $Ti(OR)_aX_{4-a}$  which includes titanium halide, trihalo alkoxytitanium, dihalo alkoxytitanium, and tetraalkoxytitanium, and mixtures thereof; the halogenated hydrocarbon includes dichloropropane, dichloroethylene, trichloroethylene, carbon tetrachloride, and chlorobenzene (col. 3, lines 41-43 and 56-59; col. 4, lines 41-59; col. 5, lines 7-11 and 21-26; Example 1; claims 1 and 10). Yang et al. further disclose that

the molar ratio of the cyclic ether and the alcohol is between 1:0.05 to 1:0.95 (col. 3, lines 63-64).

The difference between the present claims and the disclosure of Yang et al. is the requirement of the molar ratio of the halogenated hydrocarbon to the titanium compound being 1:0.05-1:0.95 in the present claims.

Kioka et al. disclose that the “hydrocarbon solvent capable of dissolving the magnesium compound.....examples of the hydrocarbon solvent used for this purpose include...and halogenated hydrocarbons such as dichloroethane, dichloropropane, trichloroethylene, carbon tetrachloride and chlorobenzene” (col. 5, lines 1-15). Thus, the relative amount of the halogenated hydrocarbon to the titanium compound will affect the precipitation process to form the solid component. The caselaw has held that “[a] particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation.” ***In re Antonie***, 559 F.2d 618, 195 USPQ 6 (CCPA 1977). Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to achieve the claimed molar ratio of the halogenated hydrocarbon to the titanium compound by routine optimization process and thereby obtain the present claims.

### ***Conclusion***

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5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ling-Siu Choi whose telephone number is 571-272-1098. The examiner can normally be reached on Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

/Ling-Siu Choi/

Primary Examiner, Art Unit 1796

July 4, 2008

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